

A Review of *Behavioral Foundations of Effective Autism Treatment*

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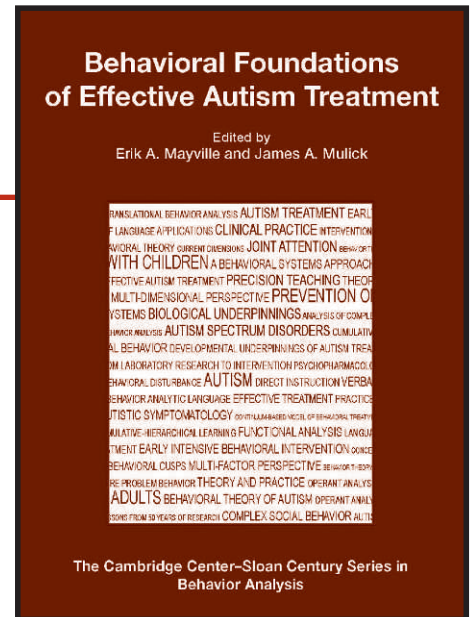
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ABSTRACT

Behavior analysts must base their practices on both the conceptual foundations and the validated technologies of our field. In recognition of these important facets of effective practice, Mayville and Mulick (2011) have produced an edited book aimed at “developing the conceptually sound and procedurally innovative behavior analysts that are so badly needed” (p. x) within the burgeoning field of autism treatment. We summarize the content of this book and evaluate its utility to practitioners working with people with autism spectrum disorders.

Keywords: applied behavior analysis, autism, book review, practitioners



In *Behavioral Foundations of Effective Autism Treatment* (2011), Erik A. Mayville and James A. Mulick gather the work of several experts in the behavior-analytic treatment of autism spectrum disorders (ASDs). The book broaches a wide range of conceptual and clinical issues (e.g., theories of autism, joint attention, verbal behavior, social behavior, translational research, programmatic outcomes of early behavioral interventions, treatment of severe problem behavior, and behavioral cusps), which are likely to be of great interest to those who work with people with ASDs. Mayville and Mulick organized their text to reflect the “dual need” (p. ix) of practitioners to understand the conceptual foundations of autism and autism treatments, as well as to access the most effective technologies for treatment. Therefore, the book is divided into two sections; “Theory and Conceptual Issues” includes chapters 1–9 and “Clinical Practice Issues” are addressed in chapters 10–16. The goals of this review are (1) to summarize the chapters of the book; (2) to describe strengths and potential shortcomings of the content; and (3) to describe the degree to which the book might be useful to practicing behavior analysts.

Chapter Summaries and Review

Chapters 1, 2, and 3: History, Concepts, and Terms in the Behavioral Approach to Autism

The first three chapters of the book address several foundational theories and concepts essential to understanding and treating ASDs. In Chapter 1, Newsom presents a chronological and critical recap of behavioral theories of ASDs covering a range of theorists (e.g., Drash & Tudor, 2004; Ferster & DeMyer, 1961; Lovaas & Smith, 1989; Thompson, 2005) and foci (escape/avoidance, stimulus control, brain abnormalities). Chapter 1 provides an invaluable resource for behavior analysts who encounter questions from caregivers and colleagues regarding theories of the etiology or causes of autism, and Newsom’s nuanced summaries will prepare practitioners to describe strengths and limitations of historical and contemporary attempts to account for the onset and course of this heterogeneous disorder.

In Chapter 2, Novak and Palaez summarize developmental research and concepts, and encourage readers to analyze behavioral patterns of autism with a “developmental and contextualistic

[approach] both in theory and practice” (p. 13). The authors describe multiple interacting variables (e.g., genetics, learning history, current physiological conditions) and systems of variables (e.g., societal and cultural contexts) that may influence the course of ASDs. They also highlight skill deficits that can be subtle but critical in determining a child’s prognosis and, potentially, his response to treatment (e.g., stimulus overselectivity, joint attention, and social referencing). Despite the laudable goals of this chapter, we found the sheer number of technical terms and concepts sometimes obscured the main points. For example, brief segues into terminological issues (changing definition of autism, p. 14; self-organization v. coalescent organization, p. 20) and the nonlinearity of development (p. 19) seemed to overcomplicate the case for autism as a set of behavior patterns arising from diverse factors in a person’s genes, learning history, and current environment. Although Chapter 2 offers a useful primer on how practitioners should use developmental concepts to discuss the complex nature of autism, implications for practice were more difficult to distill. Specific guidance on how such a conceptualization should affect the treatment process was

limited to the general recommendation that early behavioral interventions focus on “necessary precursors for the emergence of derived relational responding, which in turn underpins much of higher cognition and language development” (p. 30). Practitioners, for example, might be especially interested in a description of the behavioral systems service model cited at the end of the chapter (p. 30; Cuvo & Vallenga, 2007).

In Chapter 3, Hineline and Groeling argue for “precision and consistency” (p. 35) in practitioners’ use of behavior-analytic language, with an eye toward improving the clarity with which behavior analysts communicate with parents and the general public. The authors give examples of imprecise language that

behavior (i.e., how to reinforce the verbal behavior of others), its relevance to “a complete account of a verbal behavior episode” (e.g., Skinner, 1957, p. 33), and the degree to which listener behavior is addressed by the language assessment and instruction techniques addressed in the chapter.

In Chapter 5, Holth describes the importance of studying joint attention (JA), which is the degree to which a child shifts his gaze between a caregiver and an object or event of interest. Holth describes seminal research on JA deficits in autism, the correlation between early JA skills and subsequent language development, and how teaching these skills can be a challenge when social consequences that maintain JA in typically developing children are ineffective for children with autism. He concludes by briefly describing an innovative procedure for establishing such social consequences (e.g., smiles, nods) as effective reinforcers for teaching JA (i.e., observing response procedure; Isaksen & Holth, 2009).

In Chapter 6, McHugh provides a review of the cognitive literature on theory of mind (ToM), an introduction to relational frame theory (RFT), and recommendations for practitioners to remediate autism-related deficits in perspective taking with the aid of RFT. Further, she suggests that recent theoretical and empirical work on ToM and perspective taking is poised to influence the next

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are clear and, in our experience, prevalent (e.g., “reinforcing the child,” negative connotations of “punishment,” and confusion around “positive” in the subfield of positive behavioral support). The wealth of illustrative errors and the authors’ conceptual arguments for more precise alternatives is likely to be a handy resource for practitioners. Although the authors offer strategies for advancing from lay terms to conceptually precise terms with consumers and new students of behavior analysis, readers may need additional guidance to put these tactics into practice (e.g., Bailey, 1991; Lindsley, 1991).

Chapters 4, 5, and 6: Behavior-Analytic Conceptualizations of Social-Communicative Deficits in Autism

In Chapter 4, LeBlanc, Geiger, and Sautter address the topic of Skinner’s analysis of verbal behavior (Skinner, 1957) and the application of a Skinnerian framework to early language instruction. The authors define a functional approach to language and describe two tools for assessing verbal behavior of people with ASDs (i.e., Assessment of Basic Language and Learning Skills – Revised [ABLLS-R], Partington, 2006; Verbal Behavior Milestones and Placement Program [VB-MAPP], Sundberg, 2008). The authors also discuss common features of verbal behavior interventions including mixed-trial training, transfer-of-stimulus-control procedures, and discontinuous (i.e., probe) systems of data collection. Because practitioners are ultimately responsible for preparing their clients for multiple roles in the verbal community, a potentially useful addition this chapter would be a more comprehensive description of listener

generation of behavior-analytic social skills interventions for individuals with ASDs. Perhaps because of the complex task of introducing RFT, McHugh provides a relatively cursory treatment of two potentially important issues. First, the author characterizes behavior-analytic methods to ameliorate social skills deficits as “To a certain extent . . . proven effective with individuals with ASD” (p. 96) but discusses just one conceptual account (deficit in perspective-taking skills) of the lack of generalization achieved in some prior studies. Practitioners may appreciate being pointed in the direction of past research and discussion on a broader array of approaches for conceptualizing and facilitating generalization (e.g., Charlop & Milstein, 1989; Stokes & Baer, 1977). Second, relatively few lines are dedicated to implications of Skinner’s analysis of verbal behavior for ToM-related phenomena. Including at least one thorough and relevant discussion paper (i.e., Schlinger, 2009) in Chapter 6 would give practitioners a more complete account of behavior-analytic conceptualizations of ToM and perspective-taking skills.

Although McHugh clearly set out to write a forward-thinking chapter, she cited only one example of RFT research with people diagnosed with ASDs and simultaneously acknowledged, “there is insufficient information available concerning the strength of the link between social interaction and deictic perspective-taking repertoires” (p. 105). The authors of this review agree with McHugh and encourage practitioners to pursue a more comprehensive understanding of the principles underlying evidence-based social skills interventions by

supplementing the chapter with readings beyond RFT and ToM. Despite the broad coverage implied by its title, Chapter 6 does not address the conceptual rationale for strategies to address social skills goals such as establishing conditioned reinforcing or punishing effects of social stimuli (e.g., Isakson & Holth, 2009), teaching discriminative functions of social stimuli (e.g., Schrandt, Townsend, & Poulson, 2009; Sigman et al., 1992), or producing repertoires of flexible and varied social responding (e.g., Lee & Sturmey, 2006).

Chapters 7, 8, and 9: Conceptual Issues Related to Functional Analysis, Behavioral Cusps, and Translational Research in the Behavior-Analytic Treatment of Autism

In Chapter 7, DeLeon and colleagues describe how functional assessment has been used to identify subtle and sometimes unexpected controlling variables for problem behaviors exhibited by people with ASDs. For example, children with autism may be more likely than children with non-ASD developmental disabilities to engage in aggressive behavior when, in the past, that behavior produced access to items associated with stereotyped or repetitive play. The authors review a growing body of research on functional assessment outcomes for individuals with ASDs and describe several examples of how functional analyses (FA) may be modified to identify idiosyncratic contingencies (e.g., avoidance of social attention).

Practitioners with direct experience designing and implementing functional analyses will find the material covered in Chapter 7 invaluable for considering options other than traditional FA conditions, particularly in those cases where results are inconclusive or function-based treatment effects are lacking. Practicing behavior analysts whose experience with the functional assessment process has focused more on indirect and descriptive assessments may find the content of this chapter more difficult to apply, but they will take away excellent considerations for the conditions under which an individualized experimental analysis of maintaining contingencies is necessary.

In Chapter 8, Hixson, Reynolds, Bradley-Johnson, and Johnson characterize learning as a cumulative process in which each new skill builds upon previously learned skills. Behavioral cusps are described as skills that allow individuals to contact new contingencies or that lead to the development of additional behavioral repertoires. The notion that behavioral interventions should target skills that support the development of other important skills is an important take-home point for practitioners. The authors conscientiously note that cusps are determined on an individual basis and the featured list of cusps is not all encompassing. Although the criteria for including or excluding skills from the list are not described and some potentially important cusps are missing (e.g., identity matching of visual stimuli), the authors follow most sample cusps with a description of strategies to assess and teach those skills (though the degree of empirical support varies widely). Although practitioners will find Chapter 8 quite accessible, the most important

content might have been more clearly highlighted with a table of assessment guidelines or references for each behavioral cusp.

Dube et al. state three goals for Chapter 9: (1) to outline defining features of translational research; (2) to describe where translational research fits on the continuum of basic to applied research; and (3) to highlight areas of translational research germane to treatment of ASDs (e.g., relational learning, stimulus overselectivity, and behavioral persistence). The authors make a compelling case for translational research (i.e., the process of applying knowledge from basic research to socially significant problems of human behavior) as a distinct and valuable enterprise. To illustrate the fruitful progression of basic to translational to applied research, the authors recount the history of our present-day technology for establishing match-to-sample repertoires with people with ASDs and other developmental disabilities. They begin by acknowledging basic studies conducted with monkeys and pigeons and proceed to summarizing the guiding principles of a 10-year, 20-study program of research through which principles and procedures for teaching generalized matching skills were translated into a complete, classroom-ready technology. Although basic research foundations of applied behavior analysis have been described elsewhere (e.g., Cooper, Heron, & Heward, 2007, pp. 7–16), Chapter 9 is an exceptional resource for practitioners to better understand the continued importance of basic research in advancing our understanding of autism and the development of effective treatments.

Chapters 10 and 11: Features and Programmatic Outcomes of the Behavior-Analytic Approach to Treatment of Autism

Chapters by Green (Chapter 10) and Romanczyk and Gillis (Chapter 11) mark the transition from the conceptual focus of Section 1 to the technological focus of Section 2. Green defines early intensive behavioral intervention (EIBI) and summarizes both results and noteworthy critiques of between-group outcome studies of EIBI. She concludes the chapter with a brief but enlightening summary of findings from other reviews or meta-analyses of EIBI (e.g., Eldevik et al., 2009; Howlin, Magiati, & Charman, 2009). Chapter 10 will be particularly valuable to practitioners because it offers a succinct summary of the literature base for EIBI. Further, it highlights the growing consensus regarding superiority of behavioral treatments, while candidly acknowledging limitations of the extant literature.

In Chapter 11, Romanczyk and Gillis highlight the importance of conceptualizing behavioral interventions for ASDs as a comprehensive continuum of services over time. The authors describe common features of continuum-based models of behavioral intervention, along with standards for skills assessment and curricular planning. The authors incorporate another potentially valuable resource in the form of a flowchart designed to help monitor goal progress and make data-based decisions. Unfortunately, several steps within the diagram are not self-explanatory (e.g., “Implement-Continue-Modify-Discontinue” and “Evaluate Common Aspects of Child Environment”) and

criteria for reaching each decision are not described. Although readers will undoubtedly benefit from the overall message of the chapter, they may require additional guidance or resources to act on specific recommendations.

Chapters 12, 13, and 14: Practical Issues Related to Treatment of Adults With Autism, Prevention and Treatment of Problem Behavior, and Pharmacological Interventions

In Chapter 12, Gerhardt and Weiss address behavior analytic interventions for adults with ASDs by describing outcome data, discussing some of the unique challenges associated with delivering ABA services to adults (e.g., inadequate staff training, high staff-to-client ratios), and advocating for behavior analysts and policymakers to increase adult access to effective and individualized programming. The authors present compelling evidence to show that clinical outcomes for adults with ASDs are generally poor (e.g., Florida Centers for Autism and Related Disabilities, 2008; Howlin, Goode, Hutton, & Rutter, 2004) and give several thoughtful recommendations for practitioners to improve those outcomes. For example, they describe published examples of behavior-analytic interventions practitioners can immediately apply to a range of undertreated needs among adults with ASD (e.g., teaching diverse social responses, designing appropriate and preferred vocational settings) as well as strategies for staff managers or clinical directors to ensure adequate training and retention of direct care staff.

In Chapter 13, Hanley contrasts the behavior-analytic focus on demonstration of functional relations against the historical methods of behavior modification. He then describes variations and conditions of use for open and closed indirect assessments and experimental functional analyses. The latter half of the chapter focuses on empirically validated, function-based treatments for severe problem behavior. Hanley presents extensive evidence for the effectiveness, and relevant drawbacks, of extinction-based procedures, noncontingent reinforcement, and differential reinforcement. He concludes by encouraging practitioners to avoid severe problem behaviors through systematic prevention efforts (e.g., teaching alternative response repertoires). Perhaps the most unique asset of this chapter is the concrete recommendations, based heavily on past research, for selecting among assessment and treatment strategies for severe problem behavior.

In Chapter 14, Poling, Ehrhardt, Wood, and Bowerman discuss pharmacological treatment of ASDs with attention to the prevalence of drug therapy within this population, past behavior analytic research on drug effects, and the importance of objectively testing and integrating drug therapy with non-pharmacological interventions. The authors note that applied behavior analysts are skilled in measuring specific responses and, therefore, can help to design evaluations of drug efficacy in research and practice. The authors make a compelling case for behavior analysts and other professionals to define the goals of drug therapy with respect to specific, measurable behaviors and to base drug-therapy decisions on direct measures of operationally defined target behaviors (in addition to caregiver ratings

or descriptions of efficacy). The authors deliver an informative introduction to psychopharmacology that will orient practicing behavior analysts to standards of effective and accountable drug therapy and, perhaps, will allow practitioners to play a more active role in the evaluation of pharmacological treatments with their own clients.

Chapters 15 and 16: Established Instructional Technologies With Promise for Autism

Kubina and Lin (Chapter 15) and Watkins, Slocum, and Spencer (Chapter 16) present the defining features and extensive research support behind two instructional technologies that have rarely been applied to treatment of people with ASDs: precision teaching (PT) and direct instruction (DI). These chapters align with the editors' goals of highlighting "emerging applications of established behavioral systems and technologies" and encouraging "procedurally innovative behavior analysts" (p. x).

In Chapter 15, Kubina and Lin define PT and describe how to graph and interpret data using standard celeration charts. They also propose the use of learning channel matrices to help practitioners organize acquisition targets across relevant sources of stimulus control (e.g., see-say, hear-do, see-do, and hear-say). The authors acknowledge that empirical support for the fluency-based treatment of ASDs has "started to emerge" (p. 291) but that "more studies are needed to demonstrate the beneficial effects [precision teaching] can yield for [children with autism]" (p. 294). Despite the potential value of orienting practitioners to applications of PT for people with ASDs, it might have been helpful for the authors to address some recent questions about PT that have been raised in the literature. For example, Heinecke, Carr, and LeBlanc (2010) called for further research on whether fluency-based teaching is superior to prevailing methods of one-on-one teaching in EIBI, which curricular areas in EIBI are compatible with fluency-based teaching, and whether fluency-building interventions are contraindicated for students with escape-maintained problem behavior.

In Chapter 16, Watkins, Slocum, and Spencer begin with a review of the general literature on DI for people with and without learning or developmental disabilities. They then describe the defining characteristics of DI, and describe how those components parallel other methods of effective instruction for people with ASDs. The authors' candidly acknowledge the lack of evidence validating the utility of DI for people with ASDs, but suggest that this might be a fruitful line of research. While practitioners will have an excellent introduction to DI in Chapter 16, we would reiterate the point that more research is needed to determine the efficacy of DI programs for children with ASDs, as well as the modifications to DI curricula that may be necessary.

Organization of the Book

Despite the many strengths of each chapter, we noticed a somewhat counterintuitive progression among chapters and

sections. For example, a very advanced chapter on applications of functional analysis to core features of ASDs (Chapter 7) precedes a more foundational chapter orienting the reader to prevention, assessment (e.g., a clear overview of experimental functional analysis procedures), and treatment of problem behavior (Chapter 13). Further, we found that most chapters throughout the text addressed both conceptually and practically relevant information, making the distinction between sections seem somewhat arbitrary.

Second, the organization within chapters was inconsistent. Most, but not all chapters, began with a clear statement of purpose. Chapters that covered extensive ground without explicitly referring back to goals of the chapter (or the book) were significantly more difficult to evaluate, both in terms of how well the content met the goals or how useful it would be to practitioners. A list of objectives and a bulleted summary of conclusions in each chapter might have improved accessibility of ambitious topics such as behavior analytic language (Chapter 3) and the continuum-based model of behavioral treatment (Chapter 11), among others.

Third, the utility of the book could be improved if each chapter were assigned a more specific title so readers could readily evaluate the relevance to their work. For example, Chapter 3 (“Behavior Analytic Language and Interventions for Autism”) could easily be confused for a chapter on language interventions for children with autism though the chapter offers a primer on how and when behavior analysts should use technical terms more precisely. Similarly, Chapter 6 (“An Analysis of Complex Social Behavior”) might be overlooked inadvertently by readers who might benefit from an introduction to ToM or the application of RFT to perspective-taking skills.

A final observation is related to the title of the book. We felt Mayville and Mulick covered a much greater range of topics than their title suggested. Based on the title, readers may be surprised (at best) and confused (at worst) to find chapters dedicated to terminological issues with relevance beyond autism treatment and multiple chapters on emerging (i.e., not yet established as effective) treatments for people with ASDs (e.g., RFT-based interventions for perspective taking, PT, and DI). An edited text with such broad coverage is, no doubt, a challenge to name; a revision as subtle as *Behavioral Foundations of Autism Treatment* or *Behavioral Foundations of Emerging and Effective Autism Treatments* may better prepare readers for the diverse content they will encounter.

Who Should Read This Book?

Practicing behavior analysts who work with people with ASDs have much to gain from the historical, conceptual, and technological information summarized in *Behavioral Foundations of Effective Autism Treatment*. Professionals who serve young children in early intervention settings will have the easiest time relating content and recommendations from the text to everyday practice. With the exception of Chapter 12 (“Behavior-Analytic Interventions for Adults with ASD”), most chapters do not explicitly address implications for assessment

and treatment of ASDs across the lifespan. Even so, practitioners who work primarily with adolescents and adults are also likely to find content that is well matched to their clinical goals, resources, and client needs.

Although this review focused on the utility of Mayville and Mulick (2011) for practitioners, the text is likely to be beneficial to a much wider audience. It would be a welcome addition to the required readings for graduate courses in autism assessment and intervention, as well as providing a rich range of topics for new and established researchers. Staff trainers may also find the text useful, as it will undoubtedly provide an excellent resource for introducing historical foundations, evidence-based applications, and emerging variations in the behavior analytic assessment and treatment of ASDs. However, given that the content of most chapters is quite technical, readers would need a strong foundation in behavior analytic concepts and research design to fully benefit from the book’s content.

Conclusion

Mayville and Mulick’s (2011) book fills an important niche by addressing the theories, principles, and empirical research findings that have influenced the behavior analytic approaches to assessment and treatment of ASDs. Despite the magnitude and inherent challenges of this endeavor, the final product is likely to enhance current practices and to inspire new ways of analyzing and intervening on behaviors associated with ASDs. The editors’ goals were timely, and the historical and contemporary perspectives on ASD treatment addressed in the book are not available in any other single text. These facets clearly set the book apart from other books on ABA and autism. In closing, we recommend Mayville and Mulick (2011) for practitioners, students, and teachers of behavior analysis with few reservations. The editors have clearly taken an important step toward preparing more conceptually informed behavior analysts to work in the subfield of ASD treatment.

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Action Editor: Jennifer Austin



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